



LVK-10/LVK-20/LVK-30

Level Switch

INSTRUCTION SHEET

M2597/1296

LVK-10, LVK-11

Buna N General Purpose Single Point Detector

Features:

- Small, compact size
- Reliable long life performance
- Precise repeatability
- Highly resistant to shock and vibration
- Stem available in 316 Stainless Steel or Brass
- Switch Rating 10VA

LVK-20, LVK-21, LVK-22, LVK-23

Intermediate Size General Purpose Detector

Features:

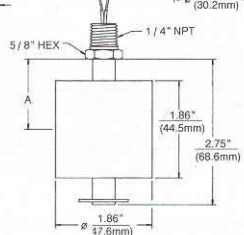
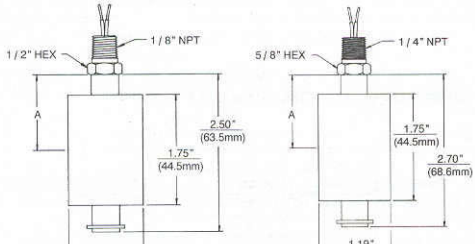
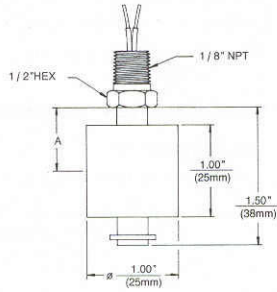
- Highly reliable, yet inexpensive
- Compact, narrow displacement
- Stem available in 316 Stainless Steel or Brass
- Long operating life
- Switch Rating LVK-20, LVK-22 is 20VA
- Switch Rating LVK-21, LVK-23 is 100VA

LVK-30, LVK-31, LVK-32, LVK-33

Large Size General Purpose Detector

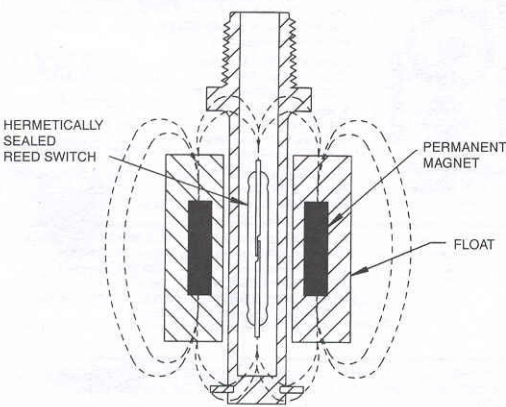
Features:

- Large float provides maximum displacement in high viscosity fluids
- Can be easily extended to multiple float arrangement up to 72" long
- Rugged design for heavy duty service
- Stem is available in 316 Stainless Steel or Brass
- Switch Rating LVK-30, LVK-32 is 20VA
- Switch Rating LVK-31, LVK-33 is 100VA



A = Actuation point is approximately midway of float travel in liquid with a specific gravity of 1.0

	Maximum Pressure	Temp. Operating Range	Mounting	Leads	Recommended Minimum Liquid SP GR
LVK-10, LVK-11	150 PSI (10.3 bar)	-40° to 225°F (-40° to 107°C) in oil to 180°F (82°C) in water	1/8" NPT	22 AWG, 24" long	.50
LVK-20, LVK-21, LVK-22, LVK-23	150 PSI (10.3 bar)	-40° to 225°F (-40° to 107°C) in oil to 180°F (82°C) in water	1/8" NPT-1/4" NPT	18 AWG, 24" long	.58
LVK-30, LVK-31, LVK-32, LVK-33	150 PSI (10.3 bar)	-40° to 225°F (-40° to 107°C) in oil to 180°F (82°C) in water	1/4" NPT	18 AWG, 24" long	.55



Design Considerations

- Pressure
- Temperature
- Mounting
- Termination
- Media Characteristics, such as
 - Specific gravity
 - Corrosive characteristics
 - Viscosity
- Actuation Point(s)
- Materials of Construction
- Switch life / Switch load

General Information

- Please refer to the current carrying limitations of the reed switches and provide protection when needed.
- Do not exceed pressure and temperature limitations listed at any time.
- Please take into consideration material of construction and chemical / media compatibility when selecting a level switch.
- Temperature changes that affect specific gravity of media may vary actuation points.
- Media that contains debris may cause float to hang up and require more frequent maintenance.
- Care should be taken to provide moisture protection and media isolation at threaded mounting areas and wire termination points.

Principle of Operation

The hermetically sealed reed switch located inside the stem is actuated by a magnetic field created by a magnet equipped float. As the float rises and falls with the liquid level, the magnetic field passing the switch causes the switch to either open or close.

Omega switches can be mounted from tank top, tank bottom or can be easily adapted for side mounting. Switches will operate normally with up to a 30 degree tilt from vertical.

Switch Configuration

Most single point switches with a SPST (single pole, single throw) switch operate in either a Normally Open (NO) or Normally Closed (NC) mode in the dry condition. All switches are shipped in the Normally Open dry mode. To change from the Normally Open to the Normally Closed mode, carefully remove the clip at the end of the stem, remove the float, reverse the float, then reinstall the float. After replacing the float and end clip, the operation will be Normally Closed. All Teflon switches are non-reversible and must be ordered in either the NC or NO mode.

Single Pole, Double Throw (SPDT), switches offer both NO and NC mode. Selection is made simply by choosing the black and red wire for NO operation or the black and white/red wire for NC operation.

Maintenance

Maintenance of the OMEGA level switches is minimal. Floats and stems should be inspected periodically for buildup on the stem which could cause float hangup and or significant buildup on the float that could change specific gravity of the float.

Electrical Data

Standard Reed switches are SPST or SPDT. The diagrams below show the typical wiring

Form A - Single Pole / Single Throw

Normally Open Dry

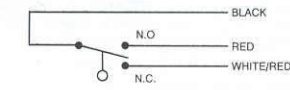


Normally Closed Dry



Form C SPDT - Single Pole / Double Throw

SPDT Dry Condition



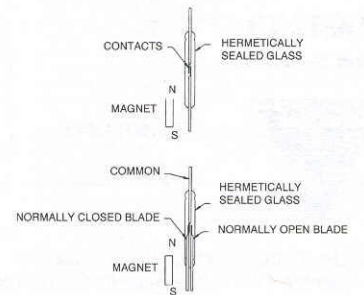
Each individual level switch varies in rating depending on the unit. See the chart below for electrical ratings.

Switch Ratings Max - Resistive Loads

Contact Rating	Volts	Amps AC	Amps DC
10VA	0-50	.20	.13
	120	.08	.05
	240	.04	NA
20VA	0-50	.40	.30
	120	.17	.13
	240	.08	.06
50VA	0-50	.50	.50
	120	.41	.41
	240	.20	.20
100VA	120	.83	NA
	240	.41	NA

NOTE: Above ratings are for resistive loads only

The reed switch is designed for reliability to millions of cycles. To ensure long life and repeatability, see the contact protection information below.



Contact Protection

In order to take advantage of the long life, highly reliable characteristics of a reed switch, it is essential to provide protection when switching inductive loads.

When current is interrupted, the inductance of the load generates a high frequency voltage, which appears across the switch contacts. If the voltage is large enough, it can cause arcing. Arcing can cause contacts to weld to each other, resulting in unreliable switching performance. It is essential to protect the circuit, by suppressing the voltage to prevent arcing.

This can be accomplished through the use of a diode for DC circuits (figure 1) and a resistor - capacitor network for AC circuits (figure 2).

Figure 1 DC Contact Protection

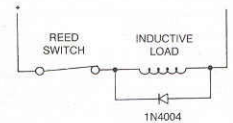
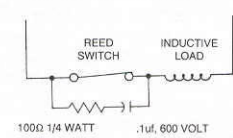


Figure 2 AC Contact Protection



Often there is a requirement to control significant loads such as pumps and motors, or to perform a control function as simple as the automatic refilling of a tank. These operations can be performed reliably with the selection of one of the following supplemental relays.

PART NUMBER	DESCRIPTION	FUNCTION	TIME DELAY
LVCN -130	PUMP UP PUMP DOWN CONTROLLER	LATCHED 12 AMP SPDT RELAY	.15 TO 60 SECONDS
LVCN -140	SINGLE SENSOR CONTROLLER	12 AMP SPDT RELAY	.15 TO 60 SECONDS
LVCN -120	THREE SENSOR CONTROLLER	TWO 12 AMP SPDT OUTPUT RELAY	.15 TO 60 SECONDS
SSR240AC10	SOLID STATE RELAY	10 AMP, AC CONTROL SIGNAL RELAY	NO



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1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

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